



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION V

**Date:** October 22, 1991

**Subject:** BTAG Review of American Chemical Services NPL Site Revised Ecological Assessment Dated October, 1991

**From:** Douglas Beltman, BTAG Co-coordinator *DBeltman*  
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**To:** Wayde Hartwick, RPM  
IL/IN #2

The Region V Biological Technical Assistance Group (BTAG) held a meeting on October 17, 1991 to discuss the revised Ecological Assessment for the American Chemical Services Site dated October, 1991. BTAG's comments are provided below.

Many of these comments are restatements of deficiencies BTAG noted in our comments dated August 9, 1991 following the review of the first version of this document. Many of those deficiencies were not addressed in this revised version. Those comments in the August 9 memo that are not specifically repeated here and were not properly addressed in the revision apply to the revised version also.

#### Chemical Concentrations Used in the Assessment

As BTAG stated in the previous comments, the concentrations used in this assessment are not the appropriate ones to use:

1. Maximum contaminant concentrations in each medium must be used for any screenings (§ 7.2.4.2 of the report) or quantitative risk assessment. The use of maximum concentrations for screening purposes is in accordance with U.S. EPA guidance (Risk Assessment Guidance for Superfund- Human Health Evaluation Manual). This same guidance document recommends using the lesser of the upper 95% confidence interval about the mean and the maximum detected concentration within a medium for use in a quantitative human health risk assessment. However, in the absence of specific Agency guidance regarding ecological assessments, Region V BTAG has determined that site maximum concentrations within media should be used for this quantitative assessment of ecological risks. This determination is based on the fact that many ecological receptors have limited home ranges compared to the areal extent of human exposure at a site, and any single sampling point can represent the contaminant concentration to which these receptors are exposed throughout their lifetime.

2. For estimation of wetland surface water concentrations, shallow groundwater concentrations should not be modified for dilution, adsorption to soil, or degradation, as

explained in previous BTAG comments. In the absence of actual surface water data, it must be conservatively assumed that shallow groundwater concentrations represent surface water concentrations.

#### **Selection of Contaminants of Concern (§ 7.2.4.2)**

As BTAG noted in the August 9 comments, this selection process is incorrect for a number of reasons:

3. The selection of only a single organic and inorganic contaminant of concern for each medium is unacceptable. No members of BTAG have indicated that this is an acceptable approach, as Warzyn states in the Response to U.S. EPA Comments letter to Mr. Wayne Hartwick dated September 7, 1991.
4. The use of RfDs as a screening tool is unacceptable. RfDs have not been developed for many contaminants, and therefore this screening procedure automatically eliminates these contaminants. The absence of a RfD is not an acceptable criterion to use in eliminating contaminants from further consideration. Also, RfDs are not appropriate for evaluating risk to aquatic organisms from sediments or surface water. RfDs are based on mammalian toxicity data; toxicities to fish, invertebrates, amphibians, reptiles, and plants differ absolutely and relatively from RfD values.
5. For exposure of aquatic species to surface water concentrations, such a screening process is not necessary. All contaminants above background are of concern, and comparison of actual and predicted surface water concentrations to Ambient Water Quality Criteria, state Water Quality Standards, No Observed Effect Levels (from literature), or Lowest Observed Effect Levels (from literature) provides a quick and valid method of determining risk. An indication of the validity of the screening procedure used in this assessment is that this procedure eliminates several contaminants which exceed chemical-specific ARARs, namely the Ambient Water Quality Criteria and the state Water Quality Standard.
6. The bioconcentration of metals is ignored, and the assumption that K<sub>oc</sub> is proportional to a BCF is not valid for many contaminants, particularly the PAHs. Actual BCFs are available from the literature for most of the contaminants BTAG considers of concern at this site and should be used.

#### **Sediment Toxicity Evaluation**

As stated in the previous BTAG comments, the method used in this assessment to evaluate sediment toxicity is unacceptable:

7. Contaminant uptake via contaminated prey by bluegill is ignored.
8. Potential effects of sediment contamination on benthic macroinvertebrates are ignored for

many metals. Benthic macroinvertebrates are essential elements of a healthy aquatic ecosystem and are sensitive to sediment contamination.

9. Sediment quality criteria derived using the Equilibrium Partitioning (EP) approach is valid only for nonpolar organic compounds, as actually stated in the U.S. EPA document this ecological assessment references in an attempt to support using EP on polar organics. This limitation of the EP approach is also stated in EPA's Sediment Classification Methods Compendium, in documents regarding the Science Advisory Board's review of the current EP approach, in literature review articles on sediment assessment (e.g. Chapman, 1989, *Environmental Toxicology and Chemistry*, vol. 8, no. 7, pp 589-599), and in previous BTAG comments.

10. Organic carbon based sediment criteria for metals are unacceptable, as the above-mentioned documents on sediments explain in detail and as stated in the previous BTAG comments. The fact that metal-organic carbon regression equations appear in the literature does not necessarily make them acceptable for use. These regression equations were developed in part to test the relationship, and the low  $r^2$  values provided in the Chapman article indicate the overall weakness of the relationship. The use of organic carbon in sediments to predict metal bioavailability has generally been dismissed in reviews of sediment assessment methods, such as those mentioned above.

#### **PCB Effects Assessment**

11. Bioconcentration factors (BCFs) based on fish PCB uptake from water must be applied to surface water and upper aquifer groundwater concentrations. The use only of a sediment BCF on sediment PCB concentrations is unacceptable.

12. As stated in the previous BTAG comments, since mammal ingestion of site contaminants would tend to integrate contaminant distribution, it should be assumed that all food items contain PCBs.

#### **Interpretation of Ambient Water Quality Criteria Exceedances**

13. In the absence of site-specific data such as toxicity tests, exceedances of Ambient Water Quality Criteria and Water Quality Standards indicate that actual or predicted site surface water concentrations pose an unacceptable risk to aquatic organisms, not merely the potential for effects.

14. Synergistic and antagonistic effects act to modify the basic assumption of additive effects. Although antagonistic and synergistic effects cannot be quantified, additive effects must be addressed quantitatively.

15. For contaminants without Ambient Water Quality Criteria, LOELs or NOELs are available from the literature and should be used. Omission of these contaminants ignores

their possible effects on aquatic biota.

### **Report Conclusions**

16. The conclusions of the report underestimate or ignore adverse contaminant effects to aquatic biota, underestimate mink exposure to PCBs, and do not address the potential effects of many of the contaminants found at the site above background level. Also, the summary paragraph on mink exposure to PCBs ignores the fact that the presence of PCBs at an unacceptable level may in itself prevent mink from inhabiting the area.

### **Additional Comments**

17. Several of the "safe" concentrations for various receptor organisms and media, such as bluegill exposure to surface water in Table 7-46, are not referenced properly.

18. The units in Table 7-49 are not correct.

19. Tables 7-49 and 7-50 are referred to incorrectly in the text (§7.2.8).

20. The exceedance of the AWQC by copper is by a factor of 4 1/2, not approximately 2 1/2 as claimed in the text.

21. In Table 7-41, exposure of fish to surface water via gill membrane exchange (i.e. surface absorption) is high. Wetland surface water and sediments present a high exposure potential for fish, aquatic birds, reptiles, amphibians, and macroinvertebrates through ingestion. Plant uptake from soils and wetland sediments should be included in this table.

Thank you for giving us the opportunity to review this revised version of the ecological assessment. If you have any questions, please contact me at 6-5902.

cc: BTAG members